



MONITORING WELL LOG: W-1D

PROJECT:	Sunoco-Philadelphia Refinery	DRILLING CO.:	Parratt Wolff
SITE LOCATION:	AOI-10	DRILLING METHOD:	Hollow Stem Auger
JOB NO.:		SAMPLING METHOD:	4' Acetate Sleeves & SS
LOGGED BY:	Tiffani Doerr	SCREEN/RISER DIAMETER:	4-inch
DATES DRILLED:	4/5/11-4/6/11	WELLBORE DIAMETER:	6.25"
TOTAL DEPTH:	76.5'	ELEVATION:	NA

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0.0			1' topsoil beneath grass.	Core samples from surface to depth using acetate sleeves; no utility clearance.		
0.0			FILL: medium brown and orange fine sand w/clay; whole brick 1.5'-2'. No odors.	0'-2' Sample submitted to laboratory for analysis		
0.0			(BC=47/2'-4-8-16-24) Same as above to 5.5'. Fill: Dark gray/black cinders and sand, very little fines, with some brick and concrete pieces. Odors.			
-5.0			(BC=5-6-3-3-3-3-2) Fill: saturated cinders, sand, loose, petroleum globules on water. Sheen. Odors.			
-10.0			(BC=2-3-2-1-2-1-1-1) 6" Recovery: m-c light brown SAND.		Grout slurry (0'-57.5')	
-15.0			(BC=2-2-2-2-2-3-2-2) 16'-17' mix of loose saturated sands and light gray clay. 17'-20' light gray CLAY; trace round gravel near 17', rest clay has 5% organics (grasses).			
-20.0			(BC=WOH/1'-2-0-2-2-2-2) Same w/ ~15% organic material.			



MONITORING WELL LOG: W-1D

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Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0.0						
0.0			(BC=WOH/2'-1-1-1-1) Same: sl micaceous, no odors.			
-25 0.0						
0.0						
0.0						
0.0			(BC=WOH/2') Split Spoon: Same: light gray clay, sl micaceous some organics.			
-30 0.0						
0.0			(BC=WOH/2'-3-2-2-3) Same: trace round gravel, 10% organics; trace layers of very fine light gray sands.			
-35 0.0			(BC=WOH/2'-1-1-1-1) Same: no gravel, trace organics, trace fine sands.			
0.0						
			(BC=WOH/2') Same as above.			
-40 0.0						
0.0			(BC=WOH/3'2-2) Same as above.			
-45 0.0			(BC=WOH/2'-3-3-3-3) Same as above.			
0.0						
			(BC=WOH-3-3-5) Split Spoon: same as above.			



MONITORING WELL LOG: W-28

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PROJECT:	Sunoco - Philadelphia Refinery	DRILLING CO.:	Parratt Wolff, Inc.
SITE LOCATION:	AOI-10	DRILLING METHOD:	Hollow Stem Auger
JOB NO.:		SAMPLING METHOD:	Acetate Sleeves
LOGGED BY:	Tiffani Doerr	SCREEN/RISER DIAMETER:	4"
DATES DRILLED:	4/18/11	WELLBORE DIAMETER:	8"
TOTAL DEPTH:	14'	ELEVATION:	

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0			[0-4'] (BC=4-4-7-8-3-4-3-3) 1' Recovery - Gravel, f/c sand and gravel, tan/gray, wet, some wood material	Sample taken 0-2' for laboratory analysis	Grout 0-2' 4" PVC - Stick Up 2'	
2.3					4" PVC - Riser 0-4' Bentonite 2-3'	
8.4			[4-8'] (BC=1-1-1-7-1-1-2-2) 1' Recovery - Black fine sand w/ some clay, wet, strong odor			
-5					Sand 3-14'	
26.6						
349						
968			[8-10'] (BC=WOH-WOH-10-4) Black f/c sand w/ some gray clay, wet, strong odor, visible sheen/product		4" PVC - Screen 4-14'	
363						
-10			[10-14'] (BC=WOH/4') Little (4") Recovery - Gray fine sandy clay, wet, strong odor			
372				Well Complete to 14'		



MONITORING WELL LOG: W-29

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PROJECT:	Sunoco - Philadelphia Refinery	DRILLING CO.:	Parratt Wolff, Inc.
SITE LOCATION:	AOI-10	DRILLING METHOD:	Hollow Stem Auger
JOB NO.:		SAMPLING METHOD:	Acetate Sleeves
LOGGED BY:	Tiffani Doerr	SCREEN/RISER DIAMETER:	4"
DATES DRILLED:	4/18/11	WELLBORE DIAMETER:	8"
TOTAL DEPTH:	14'	ELEVATION:	

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0.0			[0-4'] (BC=5-16-16-9-10-7-7-5) Full Recovery - 0-2' - Grass, black/dk. brown sandy silt and gravels, dry, no odors	Sample taken 0-2' for laboratory analysis	Grout 0-2' 4" PVC - Stick Up 2' 4" PVC - Riser 0-4' Bentonite 2-3'	
0.0			[4-8'] (BC=6-11-7-5-7-6-10-6) 3' Recovery - Top 2' - Same as above, black sand/silt w/ brick and cinders, dry, no odor; Bottom 1' - Wet, black gravel w/ f/c sand, slight odor		Sand 3-14'	
15.9			[8-10'] (BC=1-2-4-4) 6" Recovery - Same as above		4" PVC - Screen 4- 14'	
7.5			[10-14'] (BC=2-2-5-3-3-2-2-2) No Recovery	Well Complete to 14'		



MONITORING WELL LOG: W-30

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PROJECT: Sunoco - Philadelphia Refinery
 SITE LOCATION: AOI-10
 JOB NO.:
 LOGGED BY: Tiffani Doerr
 DATES DRILLED: 4/15/11
 TOTAL DEPTH: 13'

DRILLING CO.: Parratt Wolff, Inc.
 DRILLING METHOD: Hollow Stem Auger
 SAMPLING METHOD: Acetate Sleeves
 SCREEN/RISER DIAMETER: 4"
 WELLBORE DIAMETER: 8"
 ELEVATION:

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0			[0-4'] (BC=1-5-6-6-7-7-5-2) 3' Recovery - Slightly moist fine sand, alternating layes of black/medium brown and tan, 2" of soil at top (grass,roots, orange/brown)	Sample taken 0-2' for laboratory analysis	Grout 0-1' 4" PVC - Stick Up 2' Bentonite 1-2' 4" PVC - Riser 0-3'	
1.3						
1.2						
1.3			[4-8'] (BC=3-2-2-4-4-4-4-2) 3' Recovery - Same as above to 6'; 6'-8' - Wet, black fine sand, very slight odor			
-5 1.0					Sand 2-13'	
0.9						
0.9						
1.1			[8-10'] (BC=2-3-3-3) Top 1' - Wet, brown/black f/c sand and f/c gravel; 9-10' - Wet sand and f. gravel fill - small brown round "nuggets" and pumice-like material, slight sheen, loose		4" PVC - Screen 3-13'	
1.8						
-10			[10-14'] 2' Recovery - Same as above to 13' mixed w/ gray clay; 13-14' - Gray clay			
2.5						
				Well Complete to 13'		
1.5						



MONITORING WELL LOG: W-31

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PROJECT: Sunoco - Philadelphia Refinery
 SITE LOCATION: AOI-10
 JOB NO.:
 LOGGED BY: Tiffani Doerr
 DATES DRILLED: 4/15/11
 TOTAL DEPTH: 15'

DRILLING CO.: Parratt Wolff, Inc.
 DRILLING METHOD: Hollow Stem Auger
 SAMPLING METHOD: Acetate Sleeves
 SCREEN/RISER DIAMETER: 4"
 WELLBORE DIAMETER: 8"
 ELEVATION:

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0			[0-4'] (BC=10-9-14-6-4-4-4-4) - 2.5' Recovery (fill) - Top 12" - Med. brown coarse sand w/ gravel, few clays, moist, sl. odors; 1-4' - Black, strong odors, fine sand and silt like material	Sample taken 0-2' for laboratory analysis	Grout 0-1' 4" PVC - Stick Up 2' Bentonite 1-2' 4" PVC - Riser 0-3'	
1.3						
1.0						
16.1			[4-8'] (BC=1-1-2-1-1-3-4-3) - 2' Recovery - Top 1' - Wet, black sand w/ fine gravel; Bottom 1' - Black, v. moist fine sand and silt		Sand 2-15'	
-5						
100						
103			[8-10'] (BC=2-1-WOH-WOH) - Top 1' - Fill, black clayey sand w/ few fine round gravel & large gravel, slag; Bottom 1' - Lt. brown-gray clay (native)		4" PVC - Screen 3-15'	
88.6						
-10			[10-14'] (BC=WOH-WOH-WOH-WOH-2-2-4-4) - 8" Recovery - Same as above			
35.7						
54.4						
-15				Well Complete to 15'		



MONITORING WELL LOG: W-32

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PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Tiffani Doerr
DATES DRILLED: 4/18/11
TOTAL DEPTH: 13'
DRILLING CO.: Parratt Wolff, Inc.
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeves
SCREEN/RISER DIAMETER: 4"
WELLBORE DIAMETER: 8"
ELEVATION:

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0					Grout 0-1' 4" PVC - Stick Up 2' Bentonite 1-2' 4" PVC - Riser 0-3'	
-5			Well installed directly next to W-32D (see W-32D log for lithology), Sample collected from 0-2' @ W-32D		Sand 2-13'	
-10					4" PVC - Screen 3-13'	
				Well Complete to 13'		



MONITORING WELL LOG: W-32D

PROJECT:	Sunoco-Philadelphia Refinery	DRILLING CO.:	Parratt Wolff
SITE LOCATION:	AOI-10	DRILLING METHOD:	Hollow Stem Auger
JOB NO.:		SAMPLING METHOD:	4' Acetate Sleeves & SS
LOGGED BY:	Tiffani Doerr	SCREEN/RISER DIAMETER:	4-inch
DATES DRILLED:	4/7/11-4/8/11	WELLBORE DIAMETER:	6.25"
TOTAL DEPTH:	53'	ELEVATION:	NA

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0.0			8" topsoil - wooded area (BC=1-13-12-13-14-6-5-6) FILL: medium brown sl moist sand w/ little clay and gravel and slag material.	Core samples from surface to depth using acetate sleeves; no utility clearance.		
0.0			(BC=3-4-3-3-2-3-2-2) Fill: Med brown sl moist clayey sandy soil w/lg piece of asphalt in tip	0'-2' Sample submitted to laboratory for analysis		
-5 0.3			(BC=5-11-6-7) Split Spoon: WASTE: (8'-9') Wet, loose, black sandy oily sludge material (not platy). (9'-10') Wood, dk gray/blk clayey sand w/rock frags, oily/wet at 10'.			
-10 34			(BC=3-5-6-2-2-2-2-5) (10'-14') Brick frags and black oily slag material.			
-15 71.7			(BC=1-1-2-2-3-4-3-3) Clayey sand w/round gravel; pottery piece, oily.		Grout slurry (0'-47')	
-20 39.5			(BC=5-11-10-4) Split spoon: Same as above.			
-20 83.6			(BC=4-2-2-3-3-3-5-5) Top 2" same. Rest: dark gray CLAY 5% organics, moist.			
-20 27.6						
-20 104						
-20 267						



MONITORING WELL LOG: W-32D

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
11.4			(BC=2-2-2-WOH-2-2-3-2) Same clay with 10% organics (grasses), wet.			
5.4						
6.7			(BC=WOH-WOH-2-2) Split spoon: Same w/loose graveley clay at 28-28.5'.			
4.9			(BC=WOH/2'-1-2-4-3) Same: tight clay, gray/brown organic material, moist.			
3.9						
2.8			(BC=2-3-WOH/1'-3-4-3-3) Same as above to 36' - then soft brown clay w/organics.			
4.9						
5.7			(BC=2-4-3-3) Split spoon. Same as above.			
5.6					Bentonite (37'-40')	
2.5			(BC=3-3-2-1-2-4-2-3) Same as above to 42', then gray clay, tight, sl micaceous, trace fine sand.			
4.6					Sand (40'-53')	
4.4			(BC=3-2-3-2-4-2-3-3) No recovery.			
2.1			(BC=2-1-2-1) Split spoon: Gray clay, wet, loose w/trace fine sand.			
					Screen (43'-53')	



MONITORING WELL LOG: W-32D

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Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
-50 1.8 2.0 1.6 -55			(BC=WOH/2'-WOH-3-3-3) Same to 52', from 52'-54' has 30% brown organic material. Spin augers to 54' (where last spoon ended) - @54' felt and heard sound of gravel in teeth of auger. High pressure gas/water emerging from well. Sand and sm gravel coming up with water, then mica flakes (black and white) up to 1cm coming up with water.			

Spin augers to 54' (where last spoon ended) - @54' felt and heard sound of gravel in teeth of auger. Immediately upon hitting gravel, water came up from hole at high pressure - exiting augers from bolt holes in side and shooting ~20' in either direction. Stop work. By end of day, water lessened but gas still at high pressure. After 2 days gas seemed to stop - (4/11/11) drive head was removed from augers - however, when drillers pulled slightly on the rods which were left down the hole, water initially shot up to top of mast and continued as artesian (1'-3' above top of augers) (must have plugged itself up over weekend). On 4/12/11 water only ~6" above top of augers and not constant. On 4-13-11: readings at well head: Methane 23.5%, CO2 2.7%, O2 14.2%, LEL 100%, H2S 0.0, PID 0.0ppm. On 4/14/11 and 4/15/11: water no longer coming up out of augers, but can be heard gurgling down the hole and obvious gas still emerging from borehole. On 4/18/11: LEL low outside well head - augers are pulled and well casing set - no cap put on well to allow for venting of vapors (vapors can still be seen emerging from casing during sampling on 4/27/11).



MONITORING WELL LOG: W-33

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PROJECT:	Sunoco - Philadelphia Refinery	DRILLING CO.:	Parratt Wolff, Inc.
SITE LOCATION:	AOI-10	DRILLING METHOD:	Hollow Stem Auger
JOB NO.:		SAMPLING METHOD:	Acetate Sleeves
LOGGED BY:	Shaun Sykes	SCREEN/RISER DIAMETER:	4"
DATES DRILLED:	4/20/11	WELLBORE DIAMETER:	8"
TOTAL DEPTH:	16'	ELEVATION:	

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0.0			[0-4'] (BC=WOH-2-13-10-15-5-4-3) Grass/moss, brown sandy silt, gravel, brick fill, moist	Sample taken 0-2' for laboratory analysis	Grout 0-4' 4" PVC - Stick Up 2' Bentonite 4-5' 4" PVC - Riser 0-6'	
-5.0			[4-8'] (BC=WOH-3-3-1-3-3-8-4) Little Recovery - Brown, moist/loose f/c sand, little silt/clay		Sand 5-16'	
-10.0			[8-10'] (BC=5-6-36-14) 1' Recovery - Fill, wood and brick, some brown sandy/silty clay, moist/wet		4" PVC - Screen 6-16'	
-12.3			[10-14'] (BC=2-5-5-3-1-4-5-13) 1' Recovery - Same as above with some sandy gray clay, wet			
-15.0			[14-18'] (BC=WOH-2-12-12-47-21-14-12) 3' Recovery - Black, wet, f/c sand/gravel and clay	Well Complete to 16'		
-12.4						

MONITORING WELL LOG: W-34/BH-10-74

PROJECT: **Sunoco - Philadelphia Refinery**

DRILLING CO.:

Parratt Wolff, Inc.

SITE LOCATION: AOI-10

DRILLING METHOD:

Hollow Stem Auger

JOB NO.:

SAMPLING METHOD:

Acetate Sleeves

LOGGED BY: **Shaun Sykes**

SCREEN/RISER DIAMETER:

4"

DATES DRILLED: 4/20/11

WELLBORE DIAMETER:

8"

TOTAL DEPTH: 15'

ELEVATION:

Depth (feet)	OVM (ppm)	USCS	LITHOLOGY	COMMENTS	WELL CONSTRUCTION	WELL DIAGRAM
0.0			[0-4'] (BC=6-8-11-7-7-5-4) Full Recovery - Grass, brown/dk. brown sandy silt, little gravel, dry	Sample taken 0-2' for laboratory analysis	Grout 0-2' 4" PVC - Stick Up 2' Bentonite 2-3' 4" PVC - Riser 0-4'	
0.0						
0.0			[4-8'] (BC=5-3-3-3-5-9-20-10) Litte (4") Recovery - Wet, dk. brown sandy silt and gravel			
-5					Sand 3-15'	
0.0						
			[8-10'] (BC=13-10-10-5) No Recovery - wet gravel		4" PVC - Screen 4- 14'	
-10						
6.2			[10-14'] (BC=4-5-14-22-30-9) Full Recovery - Dk. brown/black f/c sand and gravel w/ wood, wet			
4.3				Well Complete to 14'		



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-36**

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PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/5/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, dark brown sandy silt w/ oranic matter, few mixed gravels, sl. moist, no odor		
		0.0			
	Sample taken 0-2' for laboratory analysis		Mixed sand and gravels, trace dark brown silt, wet @ 2', no odor		
		0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-37**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/5/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, dark brown sandy silt w/ oranic matter, sl. moist, no odor, increase sand and gravels @ 1'		
	Sample taken 0-2' for laboratory analysis	0.0	Mixed gravels, trace dark brown/black silt and sand, wet @ 1.5', no odor		



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-38**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/5/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, dark brown sandy silt w/ organic matter to 0.5', coarse sand and mixed gravels, dry, no odor		
		0.0			
	Sample taken 0-2' for laboratory analysis		Coarse sand and mixed gravels, trace dk. brown silt, dry, no odor		
		0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-39**

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PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/5/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, dark brown sandy silt w/ organic matter and mixed gravels, wet @ 1', no odor		
		0.0			
	Sample taken 0-2' for laboratory analysis		Black gravels and sand, trace black silt, strong odor, sheen on soil, wet, silt/clay @ 1.5'		
		386			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-40**

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PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/5/11

DRILLING CO.: -
DRILLING METHOD: Hand Auger
SAMPLING METHOD: Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown sandy silt w/ organic matter, dry, no odor		
		0.0			
	Sample taken 0-2' for laboratory analysis		Brown sandy silt, dry, no odor, trace clay		
		0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-41**

Page 1 of 1

PROJECT:	Sunoco - Philadelphia Refinery	DRILLING CO.:	-
SITE LOCATION:	AOI-10	DRILLING METHOD	Hand Auger
JOB NO.:		SAMPLING METHOD	Grab
LOGGED BY:	Shaun Sykes	TOTAL DEPTH:	2'
DATES DRILLED:	4/5/11		

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown sandy silt w/ organic matter, dry, no odor		
		0.0			
	Sample taken 0-2' for laboratory analysis		Tan/brown sandy silt, dry, no odor, some mixed gravels		
		0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-42**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/19/11

DRILLING CO.: -
DRILLING METHOD: Hand Auger
SAMPLING METHOD: Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown silt to tan silt and gravels, moist		
		0.0			
	Sample taken 0-2' for laboratory analysis		Dark brown/black sandy silt and gravels, wet @ 2'		
		0.0			



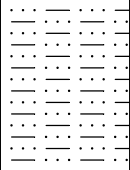
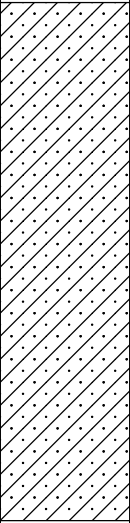
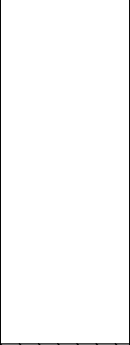
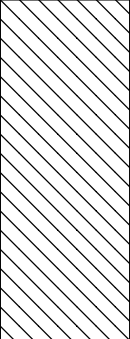
SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-43**

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PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/14/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeves
TOTAL DEPTH: 16'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	0.0	[0-4'] (BC=WOH-6-7-4-2-3-6-5) 2' Recovery - Top 1' - Grass, brown sandy silt, gravel, dry, no odor; Bottom 1' - Dk. brown/black sandy clay, moist, odor, some gravels		
-5		117	[4-8'] (BC=8-6-9-7-3-2-5-3) 2' Recovery - Top 1' - Same as above; Bottom 1' - Black fine sand, little clay, wet, strong odor		
-10		95.7			
-15		119	[8-12'] (BC=5-3-3-2-3-1-2-4) No Recovery		
		23.6	[12-16'] (BC=WOH-WOH-2-3-3-3-3-3) 6" Recovery - Gray clay, little sand, moist (native)		Boring complete to 16' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-44-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeves

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 26'

DATES DRILLED: 4/12/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	0.0	[0-4'] (BC=4-5-6-6-8-18-25-16) Full Recovery - Grass, orange/brown silty clay to 3', moist; 4" - yellow/tan sand; 8"-gray sand and gravel, moist		
		1.2			
		2.1			
		2.9	[4-8'] (BC=9-15-16-32-26-18-4-2) 2' Recovery - Same as above - gray gravels, little sand, visible brown product (SPH) in gravel, strong odor		
-5	Sample taken 10- 12' for laboratory analysis	52.1			
		136	[8-10'] (BC=1-1-1-1) Full Recovery - Black silty clay, visible product, moist/wet, strong odor, loose		
-10		242	[10-14'] (BC=WOH-1-2-3-4-15-23-24) Full Recovery - Top 2' - Same as above; Bottom 2' - White, dry, waxy material		
		516	[14-18'] (BC=WOH-WOH-WOH-WOH-WOH-WOH-5-4) Same as above, waxy resin and woody material, strong odor		
-15	Sample taken 24- 26' for laboratory analysis	445	[18-22'] (BC=8-7-18-16-24-12-4-8) Full Recovery - Waxy resin, strong odor		
-20					
		37.6	[22-26'] (BC=4-6-4-4-4-2-2-4) Full Recovery - Dark gray sandy clay, moist (native), slight odor		
-25					Boring complete to 26'



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-45-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeves

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 22'

DATES DRILLED: 4/12/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	2.4	[0-4'] (BC=WOH-3-4-4-2-2-7-8) Top 2' - Grass, brown stiff silt, some clay, little sand, moist; Bottom 2' - Gray/dk. gray medium sands, odor, moist		
-5			[4-8'] (BC=1-1-1-2-4-4-5-8) 2' Recovery - Top 1' - Black silt, clay, strong odor, moist; Bottom 1' - white/waxy resin		
	Sample taken 5-8' for laboratory analysis	33.0	[8-10'] (BC=7-9-10-12) Full Recovery - Wood material, brick, black/dark brown silt; Bottom 2" - white/waxy resin, some tar, black/oily		
-10			[10-14'] (BC=WOH-WOH-30-30/13) Wood, drilled to 14'		
-15	Sample taken 18- 20' for laboratory analysis		[14-18'] (BC=WOH-2-1-4-6-6-5-7) 6" Recovery - Dark brown/black wet sandy silt, little clay		
-20			[18-22'] (BC=WOH-2-2-2-2-3-3-5) 6" Recovery - Dark gray clay and sand, moist/wet (native)		
					Boring complete to 22'



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-46-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeves

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 18'

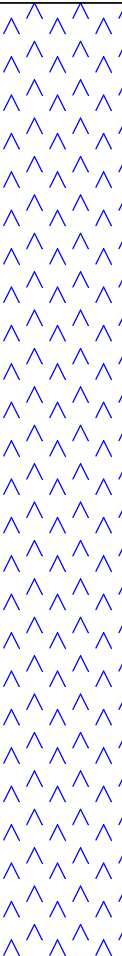
DATES DRILLED: 4/12/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=WOH-3-6-5-4-5-7-6) 2' Recovery - Top 1' - Grass, brown, moist/stiff silt and clay, some gravels; Bottom 1' - Brown/black sand and clay, some gravels, moist		
		0.0			
		0.0			
-5	Sample taken 5-8' for laboratory analysis	4.8	[4-8'] (BC= 2-3-3-14-23-10) 2' Recovery - Top 1' - Same as above; Bottom 1' - Black sludge/waxy/oily material, some sand/clay, stiff, moist, slight odor		
		10.7			
		12.2			
			[8-10'] (BC=2-5-7-11) Full Recovery - Black clay, moist, odor, stiff		
		2.9			
-10		2.2	[10-14'] (BC=WOH-3-5-6-6-8-8-7) 3' Recovery - Black clay, crumbles in intervals, moist, odor (SAA)		
		8.6			
		10.2			
		8.4			
		11.9	[14-18'] (BC=2-5-7-7-9-7-15-18) Full Recovery - Top 2' - Wet, same as above; Bottom 2' - gray/dk. gray sand (native) and gravel, sl. odor, moist		
-15	Sample taken 17- 18' for laboratory analysis	7.8			
		14.3			
		2.6			Boring complete to 18'



Page 1 of 1

DATES DRILLED: 4/19/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	0.0	Wet, grass/moss, brown sandy silt and gravel		
		0.0	Same as above, change to black @ 2', some brick fill		



SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-48

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/14/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 12'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=5-7-15-9-5-10-12-8) 3' Recovery - 1' - Grass, brown sandy silt and gravel, moist; 1' - Brick frags, fill, tan sand and gravel; 1' - Black sand and gravel, some silt, dry, slightly micaceous		
		14.4			
		9.7			
		8.6	[4-8'] (BC=5-3-3-4-4-10-6) 3' Recovery - Dark gray/black fine sand w/ clay, wet, slightly micaceous		
-5		6.3			
		4.7			
		8.1	[8-12'] (BC=3-3-1-2-1-1-2-3) Full Recovery - 2' - Same as above, strong odor, moist; 2' - Dark gray clay w/ some sand, moist, organics at bottom, slightly micaceous		
		16.8			
-10		17.1			
		19.6			Boring complete to 12' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-49**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/19/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown silt to gray/tan sand and gravels, dry		
	Sample taken 0-2' for laboratory analysis	0.0			
		0.0	Same as above, change to black/dk. brown sandy silt and gravels, wet @ 1.5'		

PROJECT: **Sunoco - Philadelphia Refinery**

SITE LOCATION: AOI-10

JOB NO.:

LOGGED BY: **Shaun Sykes**

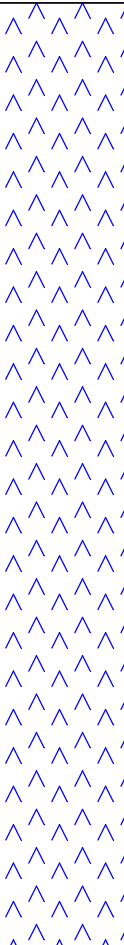
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DRILLING CO.: -

DRILLING METHOD **Hand Auger**

SAMPLING METHOD **Grab**

TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	0.0	Grass, brick/glass/cinders, fill, brown sandy silt and gravel, dry		
		0.0	Dark brown sandy silt and gravel, fill material - brick, cinders, dry		




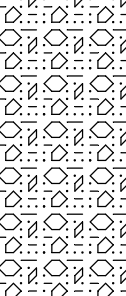
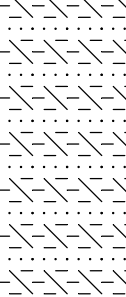
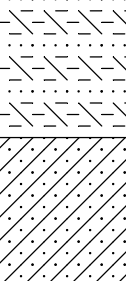
SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-51

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/14/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 20'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=WOH-6-10-9-3-5-8-11) Full Recovery - 2' - Grass, dk. brown/brown sandy silt and gravel; 2' - Gray f/c sand and gravel, some dense balck silt/clay, moist, some brick frags/fill material		
		0.0			
		4.4	[4-8'] (BC=5-9-3-3-2-5-6-7) No Recovery		
-5					
		9.8	[8-12'] (BC=1-3-22-50-31-5-3-3) 2' Recovery - Tan/brown sandy silt and gravel, wet/moist, some/little sandy clay at bottom 2"		
-10					
		8.2	[12-16'] (BC=2-3-3-5-4-2-3-3) 2' Recovery - Black/dk. gray f/c sand and gravel w/ clay, slight odor		
		16.7			
-15					
		21.5	[16-20'] (BC=8-7-29-5-7-7-4-3) Full Recovery - 2' - Same as above w/ some brick frags, wet; 2' - Dk. gray/black fine sandy clay, sl. micaceous, moist		
		10.9			
		9.2			
		2.2			
-20					Boring complete to 20' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-52

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PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/14/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 16'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	0.0	[0-2'] (BC=3-2-6-6) Full Recovery - Grass, brown/tan sand and silt, moist, some brick fill		
		0.0	[2-4'] (BC=6-16-14-16) Full Recovery - Brown/gray dense sandy silt and gravels, some brick/plastic fill material, sl. moist		
		0.0			
		0.0	[4-8'] (BC=3-9-2-14-5-5-9-11) Full Recovery - Top 2' - Same as above w/ wood 5-6', fill, brown, some brick; Bottom 2' - Brown/dk. brown sandy clay w/ gravel, micaceous		
-5		4.3			
		3.5			
		1.9	[8-12'] (BC=35-16-14-15-11-13-17-13) 2' Recovery - Top 1' - Same as above; Bttom 1' - Dk. brown/black f/c sand and gravel, some clay, bits of fabric material and brick fill, wet		
-10		2.4			
		27.3	[12-16'] (BC=16-4-4-5-3-3-3-3) 1' Recovery - Dk. gray/black clay, trace f. sand, sl. micaceous, moist		Boring complete to 16' (no waste material observed)
		6.2			
-15		4.3			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-53**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/22/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Wet, reeds/grass, tan/brown silty f/c sand, roots		
	Sample taken 0-2' for laboratory analysis	0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-54**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/22/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Dk. brown silty f/c sand, wet @ 6", roots		
	Sample taken 0-2' for laboratory analysis	0.0			





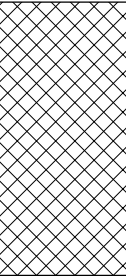
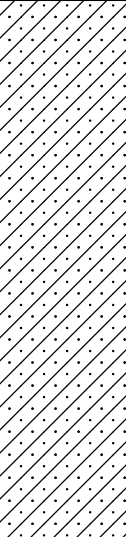
SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-55-WC

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/12/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeves
TOTAL DEPTH: 22'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	2.2	[0-4'] (BC=WOH-7-5-3-6-2-1-5) 3' Recovery - Grass, brown silt, sand and gravel, moist; Bottom 2' - gray/brown sandy silt and gravel, moist		
-5			[4-8'] (BC=3-2-1-1-1-4-3-7) 2' Recovery - Top 1' - Same as above w/ styrofoam pieces; Bottom 1' - Black/dk. gray sand and clay, odor, moist		
	Sample taken 5-8' for laboratory analysis	20.6	[8-10'] (BC=18-65-50/4) 1' Recovery - Thin clear plastic sheeting, black sandy silt and some gravel, odor, moist, loose		
-10			[10-14'] (BC=1-1-6-4-4-4-4-6) 3' Recovery - Brick/black sand, some clay and gravel, amber colored waxy resin @ 13', change to all black sand (trace clay) @ 13.5', slight odor, moist/wet		
-15		4.8	[14-18'] (BC=1-1-1-2-4-5-6-6) 2' Recovery - Black/dk. gray/brown sand and gravel, some clay (native), moist/wet		
-20			[18-22'] (BC=2-2-3-4-1-3-1-1) 6" Recovery - Dark gray fine sand, some clay, moist		
	Sample taken 20- 22' for laboratory analysis	7.1			Boring complete to 22'



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-56-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/12/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 24'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	4.9	[0-4'] (BC=1-7-12-10-15-18-20-23) Full Recovery - Top 2' - Grass, tan/brown sandy silt and gravel, moist; Bottom 2' - Gravel/sand and concrete, dry, tight		
-5			[4-8'] (BC=13-13-11-14-19-17-15-13) 2' Recovery - Gray/crumbly fine sandy silt and some gravels, tight, dry		
	Sample taken 10-12' for laboratory analysis	33.7			
		43.3	[8-10'] (BC=6-6-2-4) 4" Recovery - Gray silty clay, thin clear plastic sheeting w/ thick yellow plastic		
-10		112	[10-14'] (BC=WOH-13-16-21-20-8-6-11) 2' Recovery - Dark brown/black sand and gravel, some clay, fabric material, some white waxy resin, moist, strong odor		
	Sample taken 22-24' for laboratory analysis		[14-18'] (BC=WOH-3-14-16-57-21-19-19) 2' Recovery - Same as above w/ black tar/oily material		
-15			[18-20'] (BC=50/0.3) Concrete, drilled to 20'		
-20		12.1	[20-24'] (BC=6-1-1-1-1-1-2) Black wet fine sand, gray clay w/ organics in bottom 6", moist		
					Boring complete to 24'



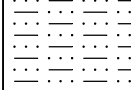
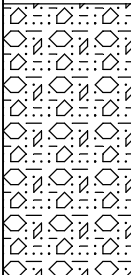
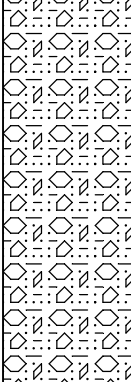
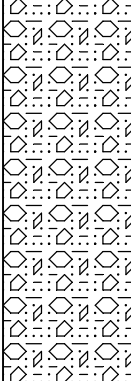
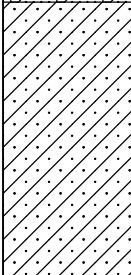
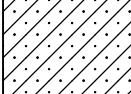
SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-57**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 16'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=2-2-3-4-5-4-5-6) 1' - Tan/brown sandy silt, wet; 3' - Black f/c sand and gravel, wet		
		6.8			
		417.3	[4-8'] (BC=4-4-2-3-2-3-2-3) Black sand and gravel, strong odor, visible oil/product		
-5		1372			
		1361	[8-12'] (BC=2-1-2-2-2-3-2-3) 1' Recovery - Same as above w/ some clay		
-10		632			
		717	[12-16'] (BC=3-3-3-3-3-3-3-3) 1' Recovery - Gray/dk. gray f. sandy clay with brown organics (20%)		
		34.8			
-15		17.2			
					Boring complete to 16' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-58**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/14/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 16'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	3.2	[0-4'] (BC=WOH-WOH-WOH-1-1-1-2-2-WOH-WOH) 1' Recovery - Grass, brown sandy silt, wet, some gravel/root material		
-5			[4-8'] (BC=WOH-WOH-2-4-4-6-7-4) Black, wet, loose sand f/c, some silt/clay, gravel		
-10			[8-12'] (BC=4-2-5-3-2-3-2-2) No Recovery		
-15			[12-16'] (BC=2-2-2-2-3-4-4-4) Brown/dk. gray f. sandy clay w/ organics (brown) 10-20%		Boring complete to 16' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-59**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/22/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Brown sandy silt, brick frags, some amber/white waxy resin material, dry		
	Sample taken 0-2' for laboratory analysis	0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-60**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/22/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Dk. brown/black f/c sand and silt, dry		
	Sample taken 0-2' for laboratory analysis	0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-61**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/22/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Light brown silty f/c sand, wet, roots/reeds		
	Sample taken 0-2' for laboratory analysis	0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-62**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/22/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Roots/reeds, dk. brown silty f/c sand w/ gravels, wet		
	Sample taken 0-2' for laboratory analysis	0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-63-WC

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeve

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 25'

DATES DRILLED: 4/13/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=1-4-9-7-9-10-6-4) 3' Recovery - Brown/orange brown fine sandy silt, moist, some gravels, tight		
		0.0			
		0.0			
		0.8			
-5			[4-8'] (BC=3-2-3-4-8-24-21-24) 2.5' Recovery - Top 2' - Brown/gray brown f. sandy silt, some clay; Bottom 6" - Dark gray/green fine sand, some clay, moist, dense		
		4.6			
		18.4			
		26.2			
		20.2	[8-10'] (BC=8-63-30/.2) Brown/gray sandy silt, moist, some gravels		
		83.3	[10-12'] (BC=2-50/.3) 6" Recovery - Concrete, black sand and fill material, some gravel		
-10	Sample taken 12-14' for laboratory analysis	52.9	[12-14] (BC=36-50/.3) 1' Recovery - Top 6" - Black sand/gravel in clay, strong odor, wet; Bottom 6" - Saw dust/wood/plastic/fiber particles, wet		
-15			[14-15] (BC=65-50/.4) Little Recovery - Dark brown/black sand, gravel, cloth/fiber material, clear thin plastic material, drilled to 17'		
			[17-19'] (BC=13-12-8-9) Full Recovery - Black sand and gravels, some clay, strong odor, wood particles		
-20	Sample taken 21-23' for laboratory analysis		[19-23'] (BC=7-8-12-11-5-5-4-4) No recovery - re-drive		
		256			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-64-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeve

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 26'

DATES DRILLED: 4/13/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS		
0	Sample taken 0-2' for laboratory analysis	2.1	[0-4'] (BC=9-13-19-12-10-8-6-6) 3' Recovery - Top 6" - Grass, medium brown silty clay, moist; Middle 12" - Red/black slag material w/ gravels, dry, metallic; Bottom 6" - Dark gray/black silt and sand				
		18.7					
		24.2					
		36.5				[4-8'] (BC=5-4-2-2-2-1-1-2) No recovery	
-5	Sample taken 11- 13' for laboratory analysis		[8-10'] (BC=9-14-10-12) 1' Recovery - Black sand/clay, brick fragments, large gravel in bottom, strong odor				
		26.2					
-10		250	[10-14'] (BC=4-4-31-20-6-5-4-5) 2' Recovery - Black/dark gray sand and gravel, glass fragments, cement fragments, moist/wet, strong odor, trace clay				
		172					
		199	[14-18'] (BC=8-5-4-2-3-2-13-14) 2' Recovery - Black/gray sand and gravel in clay, moist/wet, strong odor/oily, light gray clay in bottom 2"				
-15	Sample taken 24- 26' for laboratory analysis	88.5					
		109					
					[18-22'] (BC=WOH-5-7-4-4-5-5-7) Same as above, little recovery, wet		
		117					
-20			[22-26'] (BC=8-6-7-7-6-6-7-6) 3' Recovery - Gray clay w/ brown organics 20-30% (native), moist, slight odor				
-25							
					Boring complete to 26'		



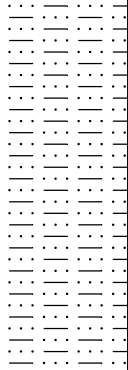
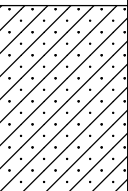
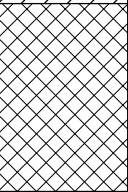
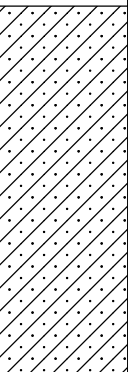
SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-65

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/14/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 16'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	33.9	[0-4'] (BC=WOH/4') 1' Recovery - Grass, brown sandy silt, some clay, moist		
-5			[4-8'] (BC=WOH-WOH-WOH-WOH-2-5-5-7) Full Recovery - Top 2' - Black sandy clay, moist/wet; Bottom 2' - Fiber material, black oily sludge/tar, strong odor		
	Sample taken 6-8' for laboratory analysis	206			
		312	[8-12'] (BC=1-1-1-1-1-2-1-1) No Recovery		
-10					
		22.4	[12-16'] (BC=3-4-3-3-4-2-2-2) 2' Recovery - Gray f. sandy clay, moist		Boring complete to 16'
-15	Sample taken 14- 16' for laboratory analysis	10.2			



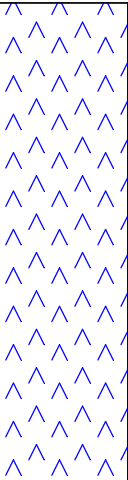
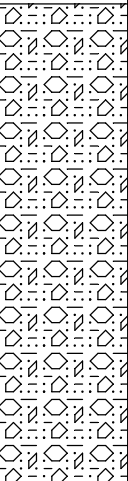
SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-66**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD: Hand Auger
SAMPLING METHOD: Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Trash/garbage, sticks/wood, brown/tan f/c sandy clay, wet		
	Sample taken 0-2' for laboratory analysis	0.0			
		1.1	Coarse sand and gravel, some brown/tan clay, wet		



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-67**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown f/c sandy silt and gravel, moist, increased sands w/ depth		
	Sample taken 0-2' for laboratory analysis	0.0			
		4.2	Wet, black fine sand		



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-68**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/14/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 20'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=1-20-25-27-28-35-25-12) Full Recovery - 1' - Grass, brown sandy silt and gravel, moist; 2' - Sand and gravel, f/c, moist/wet, gray/red/white; 1' - Black sand and gravel, f/c, little clay, moist/wet		
		1.1			
		2.8			
		2.9	[4-8'] (BC=1-2-9-18-10-4-1-1) Litte (4") Recovery - Same as above, wet		
-5		36.9			
			[8-12'] (BC=2-2-4-4-2-1-3-2) Black f. sandy clay, sl. micaceous, wet, odor		
-10		47.2			
			[12-16'] (BC=3-2-3-3-3-3-4) No recovery, wet		
-15					
			[16-20'] (BC=4-4-4-3-3-4-3-3) 1' Recovery - Dark gray/black clay w/ brown organics 20-30%, moist 50% organics bottom 3"		
-20		2.5			Boring complete to 20' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-69-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeve

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 16'

DATES DRILLED: 4/12/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=1-3-5-7-14-6-3-4-8) 2' Recovery - Top 18" - Grass, med. brown silt and some sand and gravels, moist, trace clay; Bottom 6" - Dark brown/orange sandy silt and gravels, trace clay		
		0.0			
	Sample taken 5-8' for laboratory analysis	0.0	[4-8'] (BC=4-3-4-10-7-6-15-18) 3' Recovery - Top 8" - Orange/brown silty clay, moist; Middle 2" - Tan fine sand, moist/wet; Bottom 14" - Black/dk. brown silty material, moist, strong odor, some black/oily tar material		
-5		2.1			
		5.6			
		8.7			
	Sample taken 15.5-16' for laboratory analysis	12.4	[8-10'] (BC=35-50/1) No Recovery		
-10			[10-12'] (BC=17-50/3) 6" Recovery - Large gravels some brown sandy silt, dry		
			[12-16'] (BC=4-4-3-3-3-1-2) 3' Recovery - Top 2' - Black silty sand, wet, sl. odor; Bottom 1' - Gray silty sand (native), wet		
-15					
					Boring complete to 16'



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-70-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

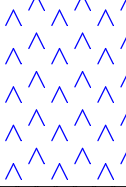
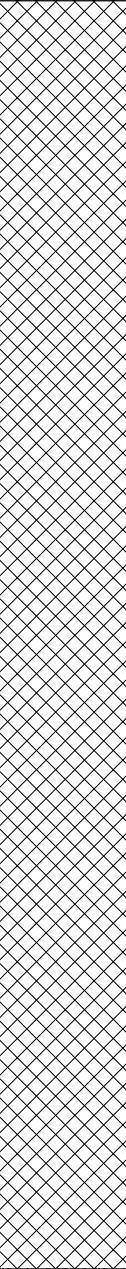
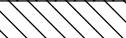
JOB NO.:

SAMPLING METHOD Direct Push - Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 16'

DATES DRILLED: 4/11/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=1-1-4-6-8-14-16-15) - 2.5' Recovery - Top 22" - Cover, orange-brown sandy clay, fill w/ gravel and roots, moist; Bottom 8" - Black, mostly fine-grained material (asphalt or tar) crumbles like soil in parts and stiff/pliable like soft asphalt in others, some gravels		
		0.1			
		0.9			
	Sample taken 5-8' for laboratory analysis	1.3	[4-8'] (BC=4-5-12-20-15-15-15-9) - Full Recovery - Same black silty material to 5'; 5-8' - Pure white waxy material, hard like resin in spots		
-5		1.3			
		2.0			
		0.6			
		0.6	[8-12'] (BC=4-14-7-9-12-6-4-4) - 1' Recovery - 2" waxy material in w/ black material, gravel, wet at bottom - very strong odors, black oily material (asphalt) - sandy parts of fill holding oil		
-10		5.4			
	Sample taken 15.5-16' for laboratory analysis	7.9			
			[12-16'] (BC=4-3-2-2-1-3-3-3) - 2.5' Recovery - Black fill/waste material to 15.5', gray clay - native (odors)		
		36.4			
-15		36.9			
		20.4			Boring complete to 16'



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-71**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/5/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, orange/brown sandy silt w/ organic matter, dry, no odor		
	Sample taken 0-2' for laboratory analysis	0.0			
		5.7	Change to balck sand and mixed gravels, dry, no odor		



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-72**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/5/11

DRILLING CO.: -
DRILLING METHOD: Hand Auger
SAMPLING METHOD: Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, dk. brown/black silt w/ organic matter, wet @ 1', no odor		
	Sample taken 0-2' for laboratory analysis	0.0			
		9.3	Black sand and gravels w/ some black silt, wet, slight odor		



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-73**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/5/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, dark brown /black silt, trace sand, wet @ 1', no odor		
	Sample taken 0-2' for laboratory analysis	0.0			
		0.0	Black sand and gravels w/ some black silt, wet, slight odor		



SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-75

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeve

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 28'

DATES DRILLED: 4/18/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=1-7-15-11-12-13-11-12) 2' Recovery - Grass, brown sandy silt w/ gravel, fill-brick and cinders, dry		
		0.0			
		2.8	[4-8'] (BC=10-7-9-7-11-30-7-11) 2' Recovery - 1' - Same as above; 1' - Black/gray sand, trace clay, orange/brick/cinder in bottoms, dry, some plastic material		
		8.8			
		47.8	[8-12'] (BC=10-12-9-6-4-6-7-14) Full Recovery - Black fine sand w/ some clay, few gravels, wood/orangic matter, moist, strong odor		
		112			
		262			
		273	[12-16'] (BC=4-4-6-5-10-11-9-17) 1' Recovery - Black fine sand, moist		
		44.8			
		14.7	[16-20'] (BC=10-6-3-4-3-2-3-3) 1' Recovery - Black f/c sand and gravel, wet, odor		
		10.7			
		23.0	[20-24'] (BC=WOH-WOH-6-16-8-7-4-5) 1' Recovery - Same as above		
		31.9			
		151	[24-28'] (BC=3-3-3-4-2-4-3-9) Full Recovery - Dk. gray clay w/ some fine sand, organics (20%) (native)		
		13.3			
		7.6			
		4.1			
					Boring complete to 28' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-76**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hand Auger

JOB NO.:

SAMPLING METHOD Grab

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 2'

DATES DRILLED: 4/20/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0					
	Sample taken 0-2' for laboratory analysis		Grass, brown sandy silt, some gravel/brick fill, dry		



SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-77-WC

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/13/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 22'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis	0.0	[0-4'] (BC=WOH-1-2-4-6-6-33-15) 2' Recovery - Grass, brown sandy silt, roots, some brick/fill material, tan silty sand @ 3-3.4', black/dark brown sandy silt 3.5-4', trace clay, dense		
		0.0			
		0.0			
-5	Sample taken 6.5- 7' for laboratory analysis (**All waxy resin)	0.0	[4-8'] (BC=WOH-3-2-3-1-5-5-7) 2' Recovery - Top 6" - Black sandy clay, moist, strong odor; Middle 6" - White/waxy resin; Bottom 6" - Dark gray/brown silty sand, strong odor, moist, some fabric material		
		2.4			
		2.6			
-10	Sample taken 10- 12' for laboratory analysis	19.0	[8-10'] (BC=2-5-6-2) 1.5' Recovery - Black sandy silt, mostly fabric, wood material, glass, papers, strong odor		
		34.5			
		67.6			
-15	Sample taken 20- 22' for laboratory analysis	119	[10-14'] (BC=2-2-40-7-35-16-12-10) 3' Recovery - Top 18" - Same as above, fiber material; Middle 6" - Black fine sand, moist; Bottom 12" - Red/brown sand, silt and gravel (old brick)		
		4.7			
		38.2			
		56.4	[14-18'] (BC=WOH-6-4-4-4-6-7-6) 2' Recovery - Black, wet, loose sand f/c, some clay and gravels (native) strong odor		
		72.6			
		84.4			
-20			[18-22'] (BC=8-6-4-9-8-6-5-5) 2' Recovery - Same as above, black fine sand w/ some clay, wet, strong odor, gray clay in tip of spoon		Boring complete to 22'



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-78**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD: Hand Auger
SAMPLING METHOD: Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown f/c sandy silt, dry		
		0.0			
	Sample taken 0-2' for laboratory analysis		Tan/brown/orange f/c sandy silt, micaceous, moist		
		0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-79**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD: Hand Auger
SAMPLING METHOD: Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown f/c sandy silt, dry		
		0.0			
	Sample taken 0-2' for laboratory analysis		Tan/orange/gray f. sand and silt, moist, trace clay		
		0.0			



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-80**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 2'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Grass, brown f/c sandy silt, dry, micaceous		
	Sample taken 0-2' for laboratory analysis		Tan/orange/gray f. sand and silt, trace clay, moist/wet @ 2', micaceous		



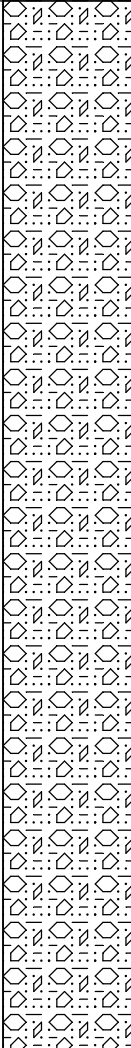
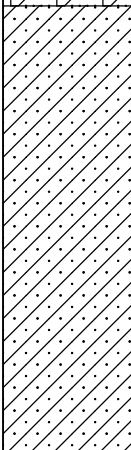
SUBSURFACE BORING LOG

BOREHOLE NO. BH-10-81

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 10'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=WOH-3-10-9-9-4-3-1) 2' Recovery - Grass, brown f/c sand, silt and gravel, moist		
		0.0			
		0.0	[4-8'] (BC=1-2-3-3-2-3-3-3) 3' Recovery - 2' - Coarse sands and gravel, wet; 1' - Gray clay, little f. sand, some organics		
		14.4			
-5		46.7			
		82.8	[8-10'] (BC=6-5) Little Recovery - Gray clay, some f. sand, wet/moist		
		277			
-10					Boring complete to 10' (no waste material observed)



SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-82-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery

DRILLING CO.: -

SITE LOCATION: AOI-10

DRILLING METHOD Hollow Stem Auger

JOB NO.:

SAMPLING METHOD Acetate Sleeve

LOGGED BY: Shaun Sykes

TOTAL DEPTH: 12'

DATES DRILLED: 4/20/11

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=WOH-1-1-2-4-7-6-5) Full Recovery - Grass/moss, dk. brown f/c sandy silt w/ some clay, gravels, wet, little woody material		
		0.0			
		4.3			
		12.7	[4-8'] (BC=1-1-4-12-10-15-16-4) Full Recovery - 2' - Gray/dk. gray f/c sand and gravel, wet, odor; 2' - Gray/dk. gray fine sand w/ clay at bottom, wet, strong odor		
-5		58.7			
		90.0			
-10		47.8	[8-12'] (BC=4-2-5-4-2-1-3-2) 2' Recovery - Gray clay, some fine sand w/ 20% organics, moist, odor (native)		
					Boring complete to 12' (no waste material observed)




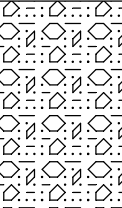
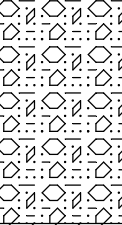
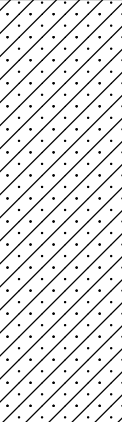
SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-83-WC**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/21/11

DRILLING CO.: -
DRILLING METHOD: Hollow Stem Auger
SAMPLING METHOD: Acetate Sleeve
TOTAL DEPTH: 14'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0	Sample taken 0-2' for laboratory analysis		[0-4'] (BC=3-2-3-2-2-4-6-4) 1' Recovery - Grass, brown f/c sandy silt, fill-brick, concrete, dry, some wood		
				[4-8'] (BC=15-14-9-6-5-5-4-2) 2' Recovery - 1' - Concrete/brick fill, f/c sand and gravel (black/dk. brown); 1' - Tan/gray f/c sand and clay, moist, no odors	
-5		0.0			
		0.0	[8-10'] (BC=6-5) Little Recovery - Large gravels and f/c sands, wet, some tan/brown clay		
-10		4.3	[10-14'] 1' Recovery - Gray f. sandy clay, some organics		Boring complete to 14' (no waste material observed)



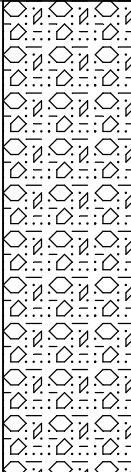
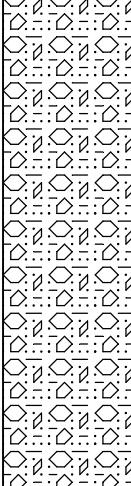
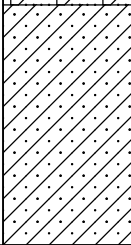
SUBSURFACE BORING LOG

BOREHOLE NO. **BH-10-84**

Page 1 of 1

PROJECT: Sunoco - Philadelphia Refinery
SITE LOCATION: AOI-10
JOB NO.:
LOGGED BY: Shaun Sykes
DATES DRILLED: 4/22/11

DRILLING CO.: -
DRILLING METHOD Hand Auger
SAMPLING METHOD Grab
TOTAL DEPTH: 5'

DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	LITHOLOGY DESCRIPTION	LITH- OLOGY	COMMENTS
0			Wet, brown sandy silt and gravel, some clay		
			Same as above, dark brown/black		
			Black fine sandy clay, wet		End boring @ 5' (no waste material observed)
-5					